

A Final Performance Report Submitted to the National Endowment for the Humanities

Grant PF-249689

Improving Conditions for the Jamestown Rediscovery Collection



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Jamestown Rediscovery Foundation (Preservation Virginia)

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1. Project Activities

Jamestown Rediscovery (JR) is responsible for archaeological investigations, conservation, collections management, educational programs, and operations at Historic Jamestowne, a world class archaeological and historic site. The site is owned and managed through a long-standing private/public partnership between the Association for the Preservation of Virginia Antiquities, now called Preservation Virginia (PV), a private non-profit organization, and the National Park Service (NPS).

In 1994, in preparation for the 400th anniversary of the 1607 English settlement at Jamestown, PV launched Jamestown Rediscovery under the direction of Dr. William M. Kelso. Highly successful excavations over the next ten years revealed that more than 85% of the original fort had survived. To date, JR archaeologists have investigated approximately 80% of the 1607 fort and 50% of the expanded five-sided 1608 fort. Approximately three million artifacts have been recovered. Significant post-fort-period sites that reflect the settlement's expansion after 1614 have also been identified on PV's 22.5 acre property but have yet to be excavated.

Jamestown Rediscovery was awarded a Sustaining Cultural Heritage Collections grant in July 2016 to improve the environmental and storage conditions of its extensive collections. The two-year project involved three major components:

- The replacement of failing HVAC equipment and controls in the “Vault” and Dry Room of the Historic Jamestown Research Center (HJRC), where the great majority of the collection is stored, and in the Nathalie P. and Alan M. Voorhees Archaearium Archaeological Museum.
- A comprehensive reorganization of the storage of artifacts in the Vault and Dry Room to improve efficiency of use of space, finding aids, and access.
- The replacement of the halogen lighting in the Archaearium with cooler and more energy efficient LED bulbs.

Original Work Plan: Year 1, October 2016-September 2017, was to be devoted primarily to the installation of new HVAC systems and controls for the Vault and Dry Room. Damuth Trane, a large HVAC company with decades of experience in Virginia, was selected as the vendor. The company provided the equipment, controls, installation, and subsequent support. We found it more efficient to deal with a single company able to take responsibility for all parts of the system from fabrication through to installation and maintenance than trying to coordinate several companies. In addition to the HVAC equipment we planned to install ambient data loggers in the HJRC and Archaearium as well as LED lighting in the Archaearium. At the same time, curatorial and conservation staffs were tasked to begin the reorganization and rehousing of artifacts.

In year 2, October 2017-September 2018, the original plan was to replace the HVAC system in the Archaearium and to continue the reorganization of the collection. Staffs were instructed to analyze environmental data and write a report detailing the improvements in the storage and display environment. The curator of collections was designated to revise the “Collections Policy” to reflect the new storage structure and processes. Finally, the project team was to assess the effectiveness of the new equipment and evaluate the overall improved environmental conditions and energy use.

Work Plan in Practice: Soon after beginning the project the team made an important change to the plan. As noted, our intention had been to replace the HVAC equipment in the Archaearium in year 2. Instead, with NEH approval, we opted to move the installation to year 1, thereby taking advantage of Damuth specialist employees and sub-contractors already on site. The company assigned a site superintendent and project manager, which worked well. The site superintendent's job was to keep the JR project manager informed of all activities taking place on a daily basis and to work directly with us to resolve any issues with equipment or installation. For example, we ended up rejecting the NovelAire desiccation equipment chosen by Damuth for the Dry Room (further details below). We found it very important for JR staff to be intimately involved because decisions made during the installation would have a lasting impact on the long term wellbeing of the collections.



Installation of HVAC equipment on roof of the Historic Jamestowne Research Center

Vault HVAC: Equipment installation began in March of 2017 with the replacement of the rooftop unit that serves the Vault. Owing to pre-existing roof leaks unrelated to the HVAC the team decided to replace the roof once the old equipment had been removed and before the new unit was put in place. The new roof was not funded through this project but Damuth Trane staff coordinated work with the roofers so as to install the HVAC equipment as soon as the new roof was ready.

We were immediately impressed with the greatly improved efficiency of the new Trane unit. For example, the old equipment operated at 8 SEER and single phase, compared to the new system at 24 SEER utilizing three phase power. Additionally CO₂ sensors were installed and outside make-up air brought in only if necessary, which also increased efficiency. Reconfiguring the system's air supply and return ducts to a raised position off the roof membrane decking will ensure we do not experience an early failure of the new roof.

As with any new installation, it took time to modify the equipment and controls to achieve optimum conditions. Careful monitoring was required, especially during the spring and fall when the HVAC systems operate between heating, air conditioning, humidification, and dehumidification. Evaluation took place across multiple seasonal changes in order to properly write the programming for the control language. The set-points that work best for JR's artifacts are 72°F (+ or – 1.5°F) and between 35% and 50% RH. This means variable cooling occurs once the ambient temperature goes above 73.5°F and turns off once the lower threshold of 70.5°F has been attained. Variable heating is energized when the temperature falls below 70.5°F and turns off after 73.5°F has been reached. The variable speed supply fan runs continuously and the CO₂

sensors continually measure the status of the storage areas and work space. Make-up air is brought in through an exterior air damper should the CO₂ level become too high.

As for humidity, the ideal setting for our collection's various material types is between 35% and 50% RH. The new rooftop package unit has been paired with our existing humidifier and can variably control the introduction of moisture in the air during heating demands through this unit. The original scope called for a tighter range between 45% and 50% RH. This narrow dead-band caused the systems to exercise too often and frequently go into alarm once outside of the desired parameters. With experimentation, the humidification set points were relaxed to 35%-45% RH. The variable ability of the new HVAC equipment and controls allows the humidity to be gradually raised and lowered, constantly floating between our alarm set points of below 35% and above 50% RH. Once controls adjustments were made there were no more humidity alarms during heating demands.

Our original NEH application stated that the new equipment would dehumidify by hot gas bypass. In discussions with Damuth, we decided to employ hot gas reheat instead. This decision had no financial impact on the budget, timeline, or on the equipment chosen, only the added benefit of higher SEER levels and improved efficiency. This technology is the most efficient form of dehumidification. All HVAC equipment works by compressing gas and creating a heat/cool exchange in a coil that air is blown across within the air handler. Normally, then, the hot gas is transferred to an exterior exhaust coil and exhaust fans would blow over them to coil to reduce the temperature so that this cycle can repeat. Hot gas reheat variably harvests the excess heat as needed in an additional coil adjacent to the main interior coil and dries the air before cooling occurs. On the other hand, dehumidification achieved through hot gas bypass introduces an additional compressor and heat/cool exchange system for the same result. That technology works but is not as efficient. The environmental solution for the Vault is expected to last twenty years.

Dry Room: The initial installation of the Dry Room equipment occurred in March of 2017. A NovelAire desiccation unit was chosen by Damuth. This equipment was factory designed to achieve 20% RH but Damuth believed they could modify the system to achieve a constant of less than 10% RH and 68°F as required by specifications in our contract. They worked hard to attain the agreed upon set points and although close were unable to reach the parameters we required. Consequently the JR team rejected the NovelAire unit in April 2018.

This is where the careful choice of the HVAC contractor paid off. Damuth diligently tried their best with the NovelAire unit but were ultimately unsuccessful and accepted the equipment was not performing as required. When we informed Damuth we did not wish to continue with NovelAire we worked together to come up with a solution that involved the choice of a different manufacturer, Stulz. Currently, Stulz only offer their desiccation unit without post cooling ability, which meant that Damuth had to create the complimentary cooling system. With the completion of the grant six months away, time was of the essence. It took approximately a month to perform all the calculations for space requirements for the unit and a six-week lead time for the Stulz equipment to arrive. Installation began in the second week of August and was completed within a week. The effort was well worth it: the unit has exceeded our expectations and is currently keeping the Dry Room at 6% RH and 68°F.

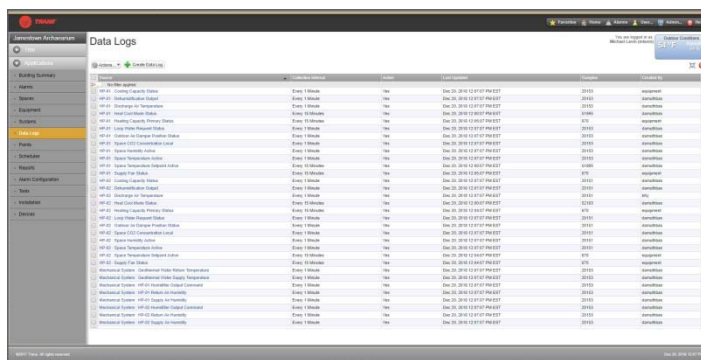
Controls: The Vault and Dry Room spaces are controlled with graphical web-based software and the ability to send remote alarms via e-mail, text message, and diagnosis in the event of a failure or whenever the environmental parameters are outside of the set range. This required tying into our existing network and internet with ethernet cables and assigning a static IP address to the Trane HVAC controls computer. Previously Jamestown Rediscovery had to download data loggers to discover issues. Jamestown and Damuth's site superintendent both received the alarms.

An issue discussed at length was the utilization of wireless space monitors. Jamestown Rediscovery requested hard wired sensors and Damuth suggested wireless. It would have been easy to install new conduits for control wires when the roof was being replaced but the company opted for a wireless approach. This turned out to be a poor decision. There were many "communication loss" issues between the equipment sensors and the control unit and eventually Damuth decided to switch to a wired system after all.

Archaearium HVAC: As mentioned above, the replacement of the two heat pumps in the Archaearium was planned for the second year of the grant but was rescheduled to Year 1 to enable Damuth to undertake all of the HVAC replacement in a single project. Utilizing geothermal wells, the museum's HVAC equipment is very efficient. The new Trane units also incorporate hot gas reheat instead of hot gas bypass and have CO₂ sensors that limit outside unconditioned make-up air. Damuth Trane phased the installation of the two heat pumps so that the Museum maintained some air conditioning thereby allowing us to remain open to the public the entire time.



New Heat Pump in Archaearium Museum



Web based controls and data logging points

Temperature readings have been consistently within the parameters requested but humidity levels were initially higher than expected. The required range was between 35 and 50% relative humidity and we have been experiencing daily spikes to 55 to 65%. The engineers at Damuth determined that air was moving too quickly over the coils, so the installation of new fan pulleys slowed down the air movement and allowed more time for dehumidification. There were initially some issues with the pairing of humidifiers to the control system that have now been resolved and the equipment is performing within the desired parameters.

Archaearium LED: The Archaearium has 419 halogen lamps that will be replaced with LED. This was intended to be a quick and simple project but proved to be one of the most difficult. Our LSI lighting fixtures transformers are reverse phase and our Lutron dimming control panel is

forward phase. This does not affect halogen lamps but does affect the function of LED. Often the lamp will not turn on or it flashes on and off. After many long discussions between LSI and Lutron, the only financially viable solution was to eliminate dimming and phasing altogether and reprogram the control panel to perform “instant on” function, similar to a light switch. The current dimming effect will now be achieved through light diffusing filters that fit into the front of the light fixture. This changed the original work plan significantly and consequently the implementation will take place in January and February 2019. All LED conversion materials were purchased before the grant expired with matching funds totaling \$33,000.

Reorganizing the JR Collection: The team undertook five main tasks for each context related to reorganizing the storage collection areas:

- Identification of all artifact storage bags and boxes from the same contexts.
- Testing of paper tags for the presence of acid.
- Assessment and possible relocation of iron and copper alloy artifacts not previously dealt with.
- Placement of the contexts in their new location, in order by context number.
- Updating of location information in the collections management system.

A “triage area” with a laptop and long table for examining context bags was set up so that all five tasks happened concurrently. Many bag tags from the beginning of the Jamestown Rediscovery archaeology project were found to contain acid and were replaced with acid-free card stock. All artifacts removed were replaced with a removal slip that indicated the items had a different storage location. The team also recorded the context numbers in each box on acid-free cards that were placed inside clear plastic sleeves on the outside of each box.

Beyond the work plan laid out in the NEH application, the staff researched the catalog status of the material in the polypropylene bags and recorded this on the exterior slip on the box. We now have a much firmer understanding of how much of our archival collection requires cataloging. Reorganizing our archive storage boxes has made it much easier to locate materials and reduce the storage footprint of the collection. Two-hundred fifteen boxes of uncatalogued lithics, which do not require climate control, were removed from the lower level of the Vault to a new custom built unit located just outside the HJRC. Within the Vault, 82 boxes of human remains were then moved to the former lithics storage area, a niche screened from public view that enables us to treat the remains respectfully.

One of the most significant deviations from the work plan was the decision to jettison the organization of the JR study collection by “master context,” that is, the “container” of the artifacts’ deposit such as a well, cellar, or other significant feature. Although organizing the collection by master context had been helpful initially to research staff (given the tight temporal context of the artifacts and features) it did not comply with standard material culture collections procedures of organizing by material and type/form. In addition, analysis of JR collection has revealed that a large proportion was related to a specific event in Jamestown’s history, the arrival of Lord Governor De La Warr in June 1610 which led to a major cleanup of the fort and rebuilding following the disaster of the “starving time” when the settlement came very close to being abandoned. Features such as cellars, pits, and wells were filled with the rubbish lying

around the fort and therefore reflects this particular event rather than the actual use of the buildings and features themselves.



Storage by Material and Type and New Reference Collection in Vault

The staff agreed that the establishment of a reference collection organized by material and type would better represent the richness and breadth of the collection and be more useful to scholars and the public. Accordingly, artifacts were arranged by material—ceramics, pipes, glass, metals, bone, organics—and then sub-divided within their group by type and form. This approach is reflected in the catalog and better represents the artifacts’ cascading attributes, for example, Ceramic/Earthenware/Border Ware/Pipkin/Buf Bodied/Green Glaze. General temporal categories were also applied as follows, Fort Period: 1607-1624, Town Period: 1625-1699, and Post Capital Period: 1700 and later.

To assist researchers with the identification of key artifact data and tpq, two large tables in the center of the Vault have been reserved for the layout of artifacts and objects. Archaeologists, curators, and historians may examine the materials being excavated, processed, and cataloged and pull the key artifacts necessary to understand the date, phase, or function of particular structures and features. The artifacts and objects remain on the table until the technical report has been written and then are either incorporated into the reference or join the rest of the artifacts by context in archival storage.

Cataloging and Computer Applications: The Jamestown Rediscovery team has been cataloging on the same digital platform, ReDiscovery, without a comprehensive upgrade of software since 1994; a cause of concern on many levels. From a technical standpoint, ReDiscovery is no longer supported on 64bit Windows machines and is therefore unstable. The diversity and complexity of the collection has led to challenges in applying the appropriate field to capture important artifact data. The lack of restrictions on the attributes which may be selected, for example, has led to errors and incorrect use of memo fields to record information that should have been placed in the attribute data fields.

The team had anticipated upgrading to a new platform, Proficio, before the beginning of the grant but in fact data migration did not begin until March 2018. In Proficio, each cataloged artifact’s location is designated as archive unless stated otherwise, such as in reference collection

storage, on the layout table, in the Dry Room, on exhibit in the Archaearium, or on loan. This is an ongoing project and together with necessary corrections to our database will take time to complete.

2. Accomplishments

All the major objectives of the project have been achieved: (1) replacement of failing HVAC equipment and controls, (2) significant improvement of environmental conditions in the Vault, Dry Room, and Archaearium, and (3) the comprehensive reorganization of JR's collections. The installation of LED lighting in the Archaearium will take place early in 2019. Funds, equipment, and staffing have been secured

The improvement in efficiency of the new equipment has met or exceeded our expectations. The old HVAC unit was 8 SEER compared to the Damuth HVAC system's 24 SEER. Temperature and humidity parameters in the Vault and Archaearium have been achieved at the optimum set-points of 72°F and 35%-50% RH. In the Dry Room new Stulz unit maintains 68°F and 6% RH. New controls and data loggers allow the team to be confident about the maintenance of correct environmental conditions at all times. Careful monitoring permits seasonal readjustments as necessary.

Collections: The reorganization of the collection and rationalization of storage space have been major improvements. In particular, the establishment of a reference collection by material and type allows for comparative analyses of artifacts across the site, the fort and the town for example, as well as with other sites. We have made the reorganization of the collection a talking point with our visitors during public tours of the Vault and with our donors. The reference collection is already sufficiently developed to be used by researchers and eventually we will place the entire database online to facilitate wider public access. In addition, the team has initiated the upgrade of our cataloguing system from ReDiscovery to Proficio that will lead to greater efficiency in maintaining full and accurate records.

3. Audiences

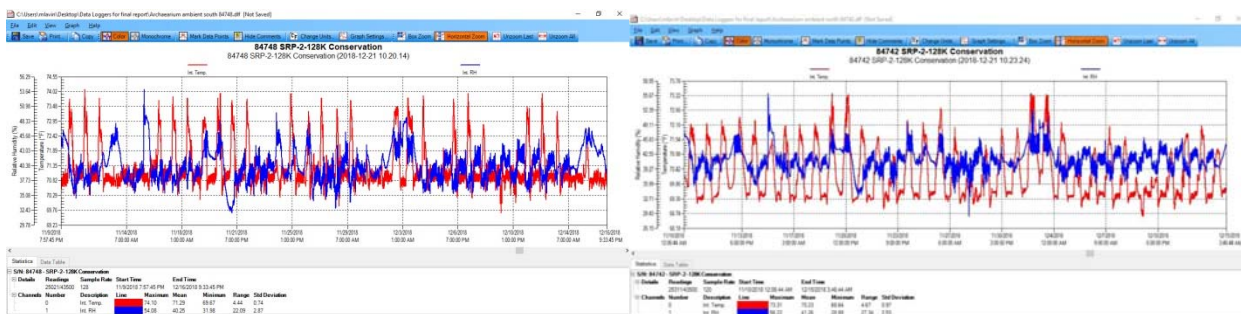
Historic Jamestowne receives 210,000 ticketed visitors annually. Our archaeological discoveries are regularly reported in regional and national press outlets, and sometimes in international news media. In July 2015, the discovery and identification of four of the first founders of Jamestown in the chancel of the first English church reached an estimated global audience of 900 million. This past summer the discovery of the remains of another prominent settler, possibly Governor Sir George Yeardley, was reported in the *Washington Post* and on BBC World News, beside other national newspapers, radio, and TV. Jamestown is one of the most important historical and archaeological sites in the US.

Although unseen by most visitors, the improvements in JR's critical infrastructure as a result of this grant will have a key impact on our ability to display our collections and fulfill long term stewardship responsibilities. As a not-for-profit organization committed to public education, our collections showcased in the Archaearium and Vault as well as on our website and in print play an essential role in illustrating the history of early Jamestown and America. In 2019, for

example, in preparation for the 400th anniversary of the first General Assembly (the founding of representative government and the rule of law) and arrival of the first Africans in English America, we will create major onsite exhibits to attract new audiences to Jamestown and raise awareness throughout the nation and overseas. The great majority of visitors go to the Archaearium to see our major onsite discoveries and many of our programs (especially those for children) are based on what the artifacts in our collections reveal about daily life at Jamestown in the early seventeenth century.

4. Evaluation

JR staff undertook the evaluation of the project. This was achieved principally by the staff's close involvement in Damuth's equipment recommendations, ongoing discussions with the company's specialist engineers during installation, and thorough and continuous monitoring of the equipment's performance in the Archaearium, Vault, and Dry Room. Temperature and humidity parameters in the Vault and Archaearium have been achieved at the optimum set-points of 72°F and 35%-50% RH. In the Dry Room new Stulz unit maintains 68°F and 6% RH.



Continuous Monitoring of Temperature and RH in Archaearium and Vault by new Data Loggers

Weekly meetings with the JR team were held to agree on approaches to the reorganization and to ensure deadlines were met. We were able to implement the project with little or no adverse effect on visitors. The Archaearium remained open during the installation of the equipment and we continued to offer public tours of the Vault throughout the reorganization.

5. Continuation of the Project

Monitoring the performance of the new HVAC equipment will be ongoing and, as noted above, we will install LED lighting in the Archaearium by spring 2019. Staff will continue to work on the reorganization of the collection, development of the reference collection, the further rationalization of archival storage space, and populating the new catalog, Proficio. Staffing and financial resources will be made available by Jamestown Rediscovery for the continuing work.

Over the years, Jamestown Rediscovery has developed a number of strategic partnerships that have been highly significant in the development of our work. They include the Smithsonian Institution's National Museum of Natural History (forensics), FBI Quantico (forensics and genomics), University of Leicester (genomics), Virginia Commonwealth University (oral micro biome), CSSI (advanced applications in GPR and other remote sensing techniques), and the

College of William and Mary (anthropology and public outreach). These and other partnerships will be strengthened immeasurably by the significant improvements to our environmental controls and organization of our collections.

6. Long Term Impact

Active archaeology in the field and lab at Jamestown is a long term commitment and the ability to maintain our collections according to best practice is absolutely essential. The installation of new HVAC equipment and controls in the Archaearium, Vault, and Dry Room therefore represents a major improvement in our capabilities. We estimate the lifetime of the new HVAC equipment with regular servicing and maintenance to be approximately 20 years. JR has established an annual fund for equipment replacement to guarantee monies are available for the installation of new systems when the time comes.

The installation of new HVAC and controls units encouraged the team to look for support from donors to help with related equipment needs such as a generator at the Archaearium and LED lighting. Donors have responded positively to our efforts to reduce carbon emissions by the use of more efficient equipment.

Jamestown Rediscovery is regarded by peers as one of the leading archeological projects in the nation and is frequently mentioned in leading professional magazines and journals. As a consequence of this grant, the team now has the ability to care for our collections long term and to showcase our remarkable artifacts in our museum confident in the knowledge that we are able to maintain optimum environmental conditions.

7. Award Products

The most important grant product produced during the project was the achievement of industry standards for the safeguard of precious artifacts and objects in our collections, whether on display in the Archaearium Museum, in the Vault, or in storage. Additionally, the establishment of the reference collection, organized according to accepted material culture collection protocols, will be of great help to researchers and staff.

Selected artifacts from our collection will be used in two new exhibits related to the 400th anniversary of 1619 that will be mounted in Jamestown's Memorial Church and in a completely reorganized gallery in the Archaearium. We plan also to feature the collection in two books, one devoted to the first General Assembly and the other to the arrival of the first Africans at Jamestown, which will appear next year. Our website www.historicjamestowne.org will feature the reorganized collection and eventually the entire database.

The Jamestown Rediscovery team is most grateful to the NEH for the award of a SCHC grant which has made these vital improvements possible.

APPENDIX 1

Images of Equipment Installation

Installation:



Vault HVAC Installation



Landing Vault HVAC Equipment



Rejected NovelAire Desiccation Unit



Accepted Stulz Desicair Desiccation Unit



Archaearium Museum HVAC Install



Museum Heat Pump #1



Museum Heat Pump #2



Museum Humidifier



LED Conversion Supplies



Whole Museum Generator

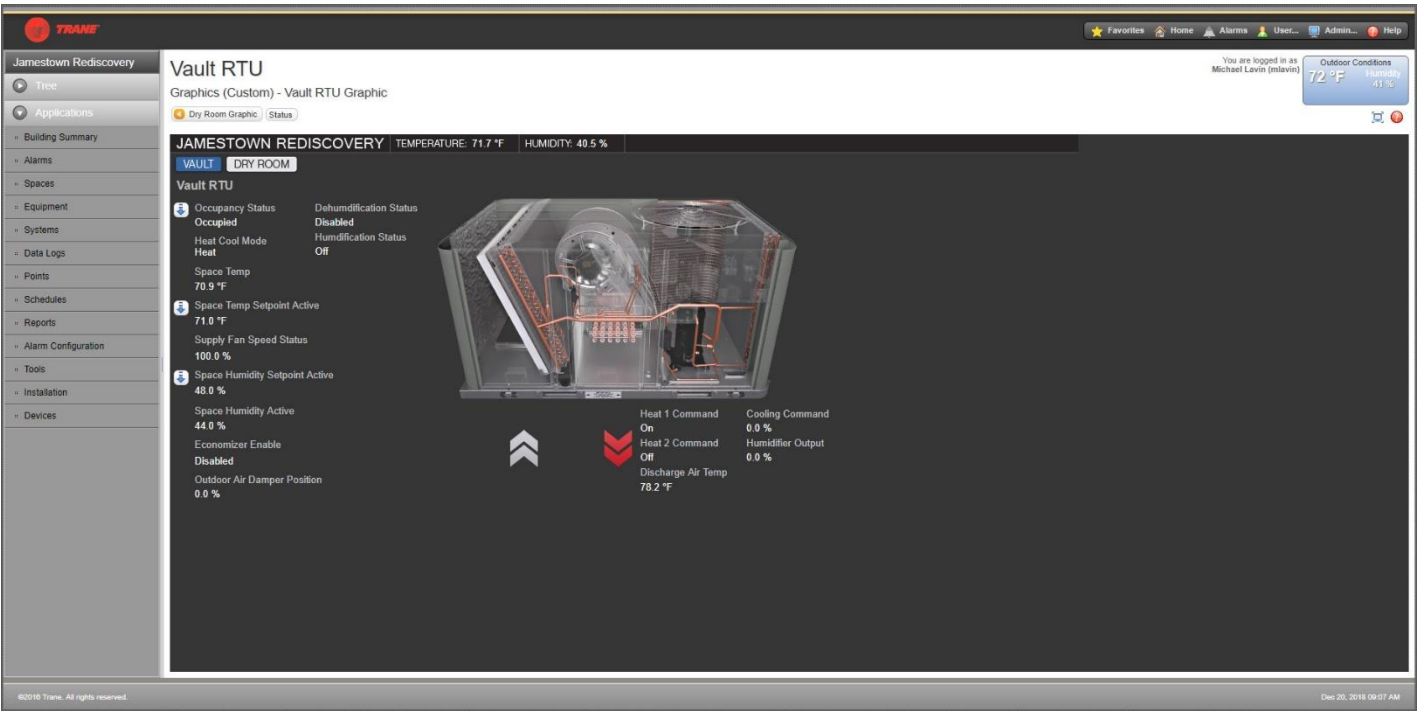


Generator Automatic Transfer Switch

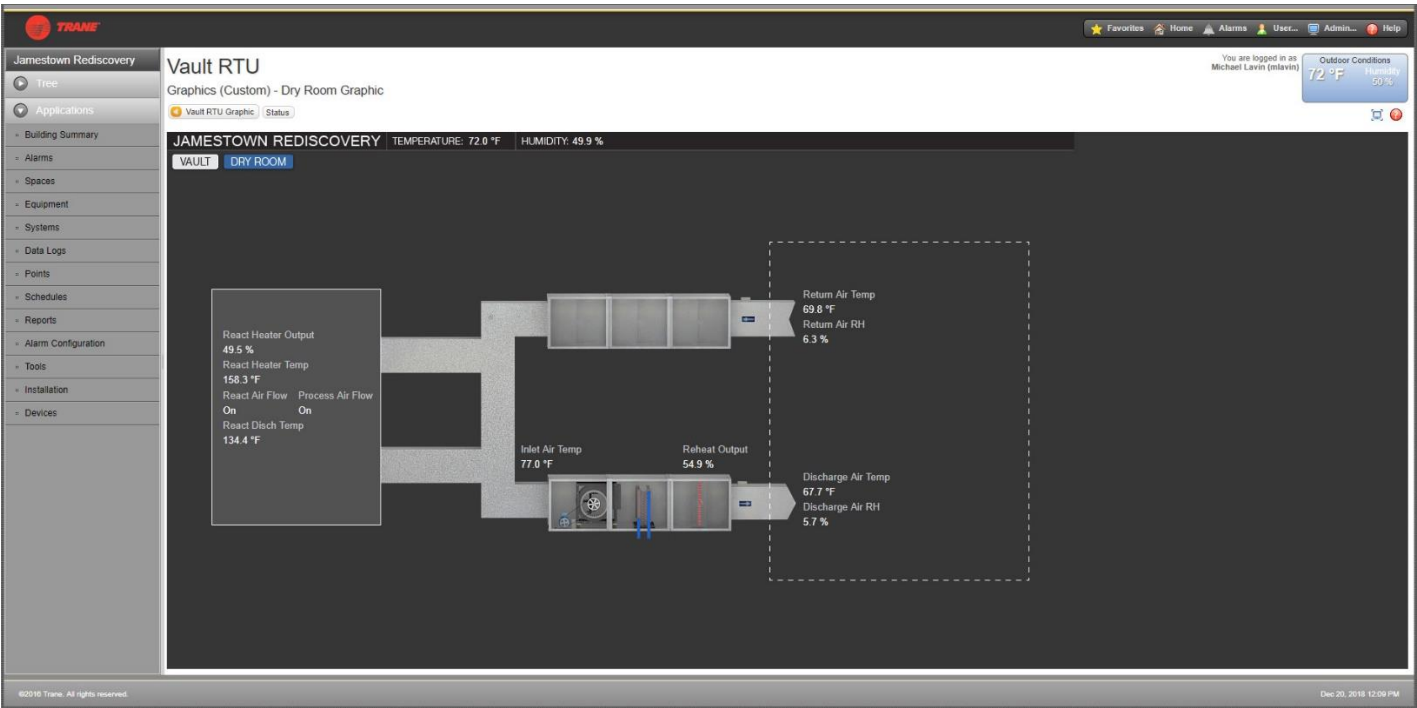
APPENDIX 2

Images of HVAC Controls and Monitoring

Monitoring:



Vault Web Based Controls



Dry Room Web Based Controls

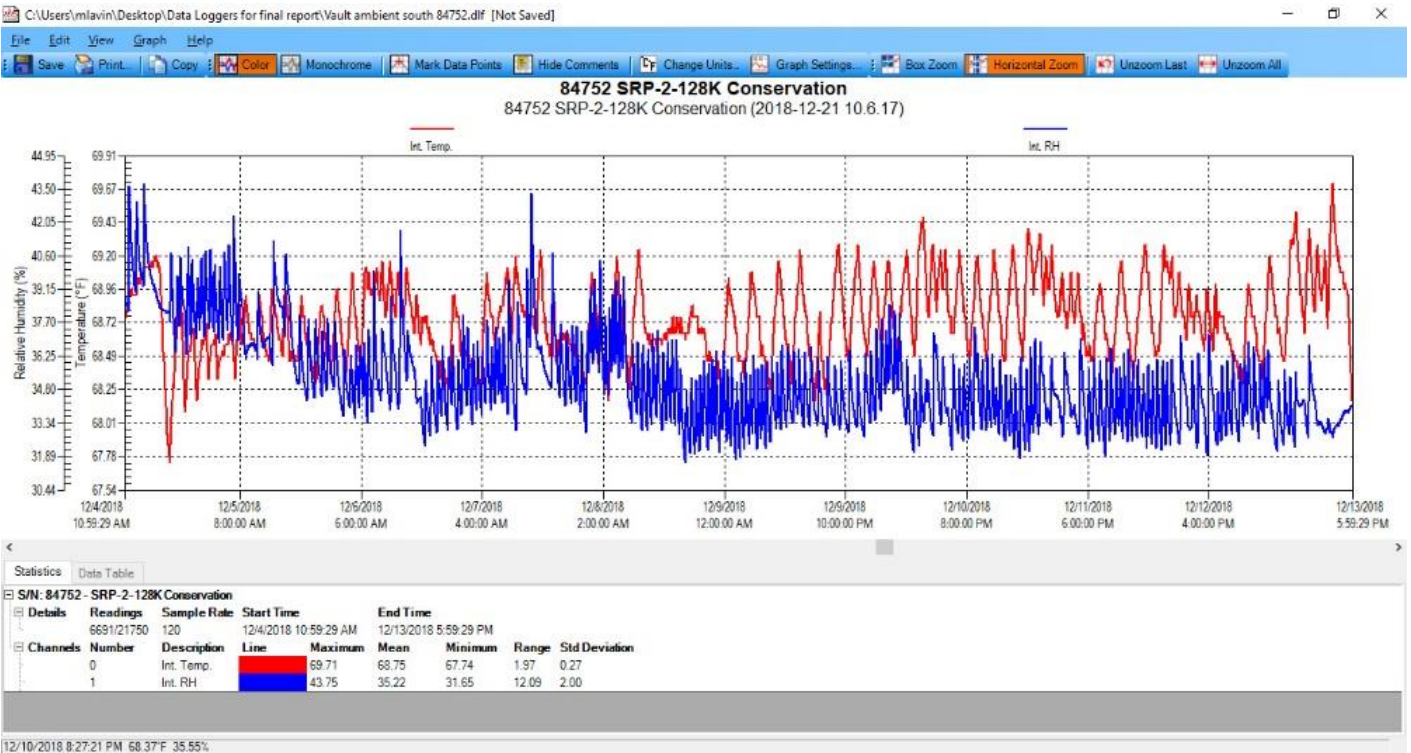
Jamestown Archaearium Data Logs

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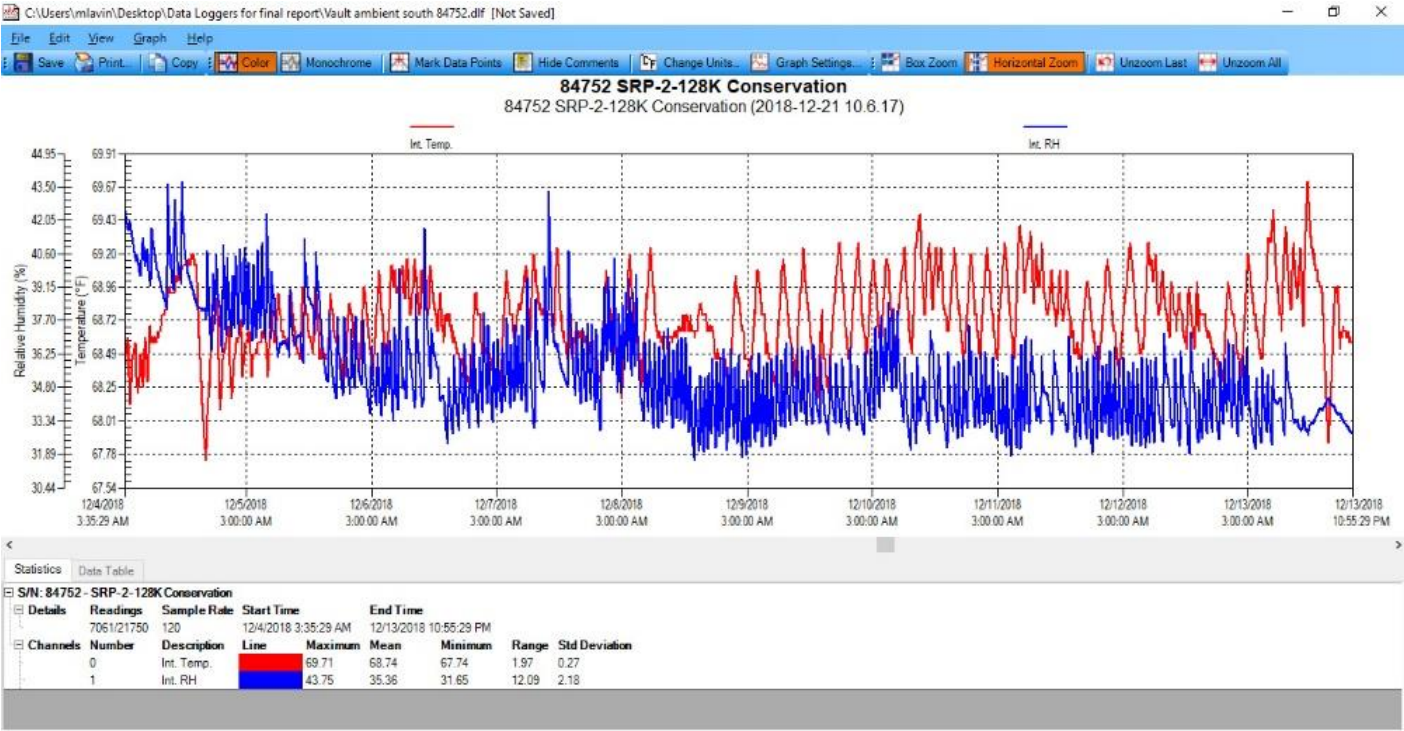
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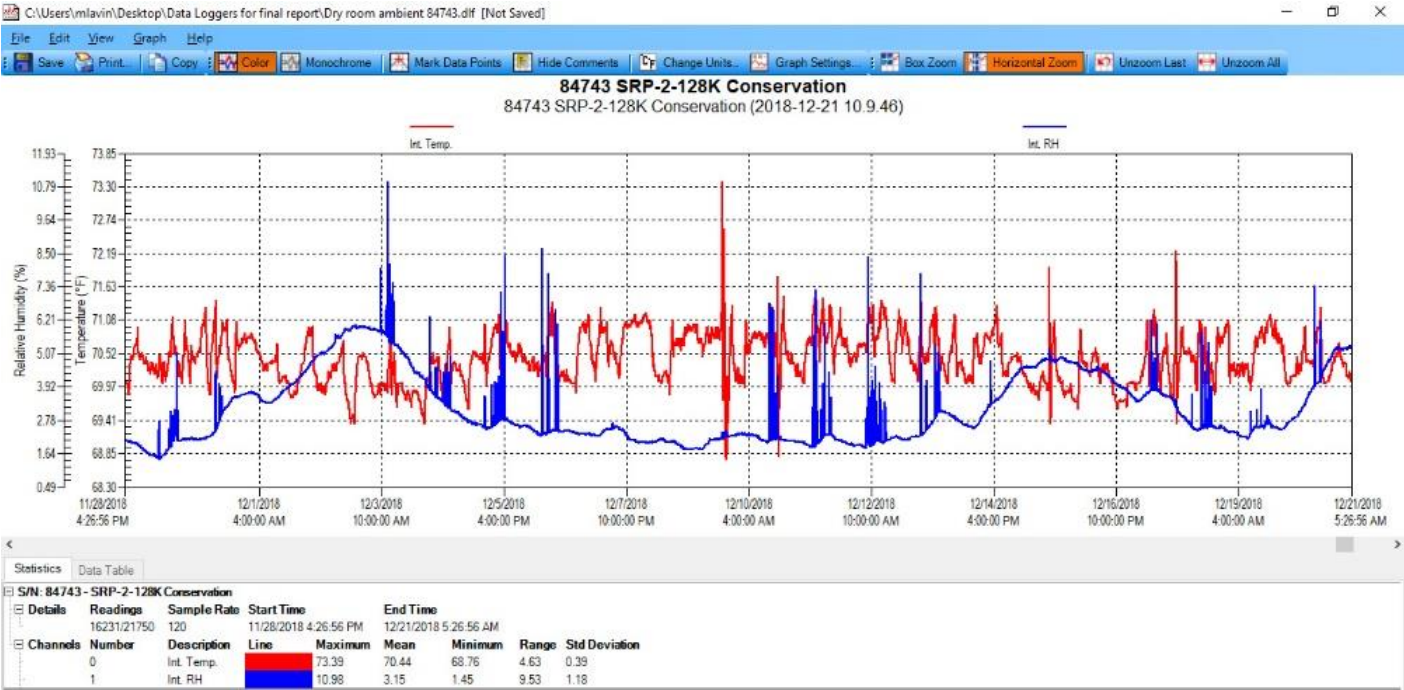
Archaearium Web Based Controls



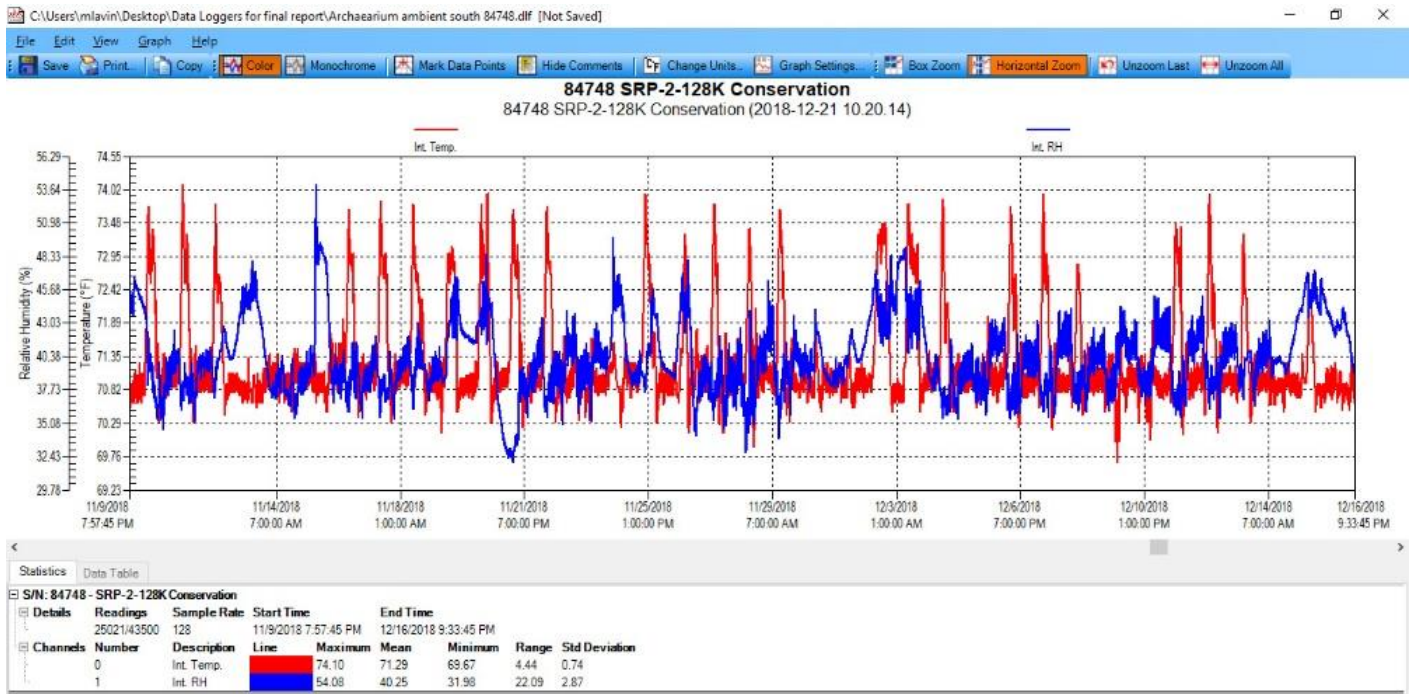
Vault Ambient Monitor 1



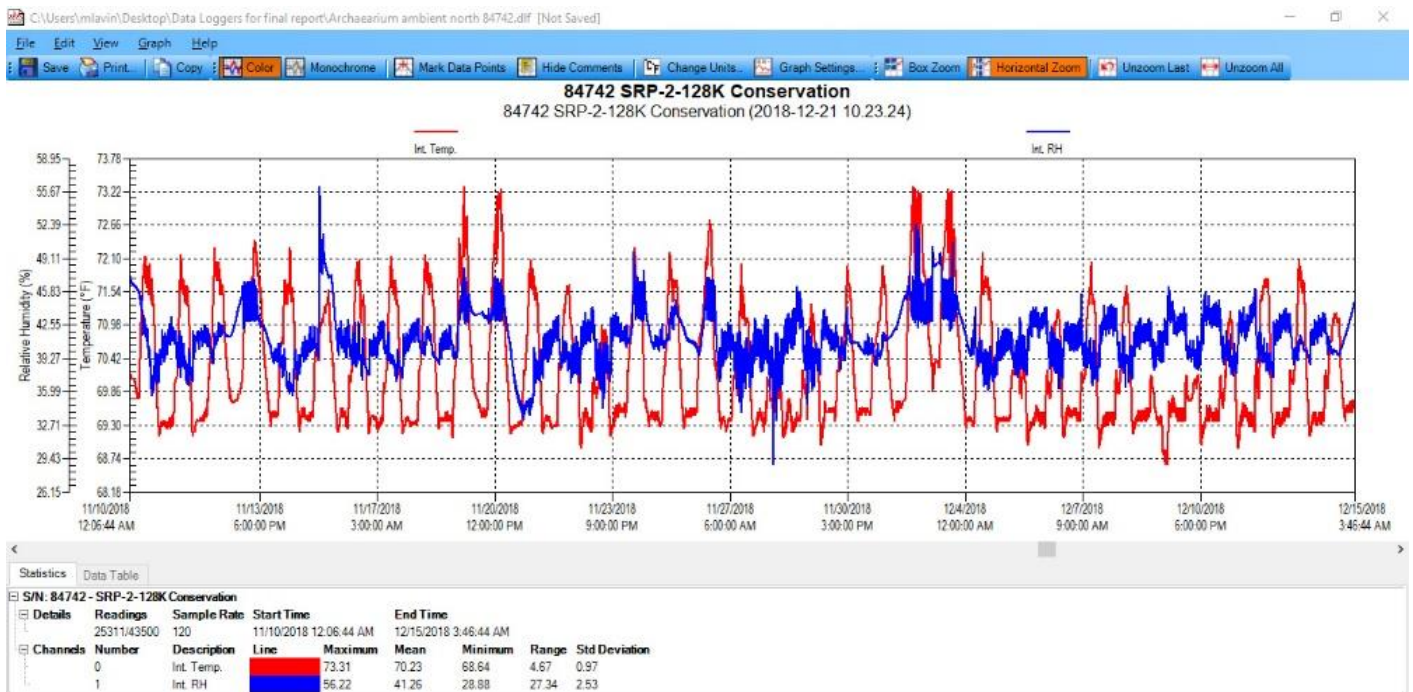
Vault Ambient Monitor 2



Dry Room Ambient Monitor



Archaearium Museum Ambient 1 Monitor



Archaearium Museum Ambient 2 Monitor

APPENDIX 3

Images of collections work

Collections:



Triage processing archive collections



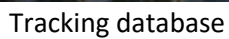
Testing for acid containing tags

| | | | |
|--|--|---|--|
| BAG TAG JR 1428A Description: <u>CONFEDERATE</u> Date: <u>6-9-04</u> Name: <u>RECTORARO</u> Brick Wt. <u>1210</u> g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428A Description: <u>P2</u> Date: <u>6/1/04</u> Name: <u>JARROSEN</u> Brick Wt. <u>1210</u> g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428A Description: <u>CONFEDERATE</u> Date: <u>6-9-04</u> Name: <u>RECTORARO</u> Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428A Description: <u>P2. CUM-UP</u> Date: <u>6/2/2004</u> Name: <u>L. PICOONARO</u> Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ |
| BAG TAG JR 1428B Description: <u>FLINT TOPSOIL</u> Date: <u>6-10-05</u> Name: <u>KM, FRW, JS</u> Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428D Description: <u>CF</u> Date: <u>4-5-06</u> Name: <u>Richardson</u> Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: <u>Vent Dug Summer 05</u> | BAG TAG JR 1428D Description: _____ Date: _____ Name: _____ Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428E Description: <u>P2</u> Date: <u>7/25/05</u> Name: <u>Reed, Smith</u> Brick Wt. <u>341</u> g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ |
| BAG TAG JR 1428E Description: _____ Date: _____ Name: _____ Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428E Description: <u>P2</u> Date: <u>6/16/2005</u> Name: <u>L. PICOONARO</u> Brick Wt. <u>341</u> g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ | BAG TAG JR 1428E Description: <u>P2</u> Date: <u>7/25/05</u> Name: <u>PICOONARO, Smith</u> Brick Wt. <u>341</u> g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: <u>6 Bandolier frags. 1 Glass bead frag.</u> | BAG TAG JR 1428E Description: <u>P2</u> Date: <u>7/25/05</u> Name: <u>Reed, Smith</u> Brick Wt. _____ g Brick dimensions on back _____ Slag Wt. _____ g Artifacts Removed: _____ |

Scanned acid containing tags



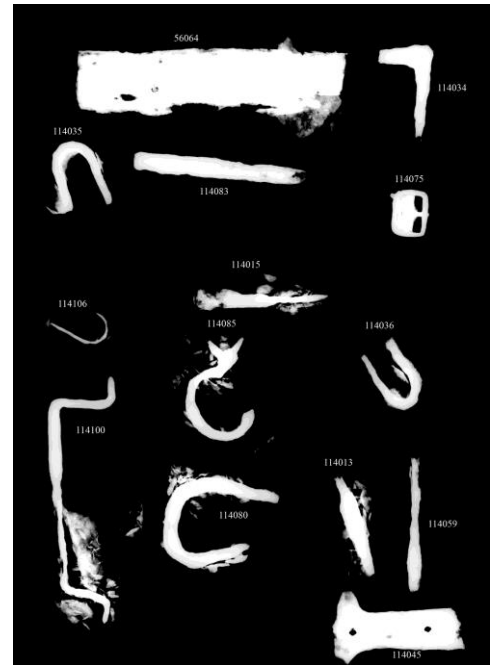
Archive boxes arranged by context



Sample page from tracking sheet



Taking digital X-Ray of archive iron



Sample digital X-Ray



Vault reference collection



Dry Room reference collection

[illegible]

| Context Sample: <i>Human Remains</i> | | Box #: _____ | | |
|--------------------------------------|----|--------------------------|--------------------------|--------------------------|
| Included in Box: | | Conserved: | Catalogued: | Analyzed: |
| JR CONTEXT | JR | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| MASTER CONTEXT | | | | |
| UNIQUE ID | | | | |
| OBJECT # | | | | |

| | | | | |
|----------------|----|--------------------------|--------------------------|--------------------------|
| JR CONTEXT | JR | Conserved: | Catalogued: | Analyzed: |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| MASTER CONTEXT | | | | |
| UNIQUE ID | | | | |
| OBJECT # | | | | |

The screenshot shows the 'Re:discovery' application window. At the top is a menu bar with 'File', 'Edit', 'Record', 'List', 'View', 'Select', and 'Help'. Below the menu is a toolbar with various icons for navigation and actions. The main window displays a form for creating a context record. The form has several sections: 'Art Id' with 'JR C F ~ 3081C' and 'Count: 8'; 'Ware' with 'NATIVE AMERICAN' and 'Form' with 'POT'; 'Material' with 'C CLAY' and 'Sub-Form' with 'SHELL TEMPER'; 'Dec Tech', 'Color', 'Element', 'Mark', 'Condition', 'Bore Diam', and 'Weight' fields; 'Remarks' with 'multiple vessels'; 'Cxt Desc' and 'Master Cxt' with 'STRUCTR 191'; 'Cons Flg' with a dropdown set to 'N'; 'Check Id' with a dropdown set to 'N'; 'TPG Base' with a dropdown set to 'N'; 'Location' field; 'Change By' with 'BLY' and '10/08/2014'; 'Add By' with 'MERRY' and '08/13/2012'; and 'Image' field. At the bottom right are buttons for 'Next Art #', 'OK', 'Cancel', and 'Save'.

Re:discovery

File Edit Record List View Select Help

Sort Order: By Context

Art Id: JR C F ~ 3081C Count: 8 Create Context Rec

Ware: NATIVE AMERICAN Form: POT Sub-Form: SHELL TEMPER

Material: C CLAY

Dec Tech: Color: Element:

Mark: Condition: Bore Diam:

Weight:

Remarks: multiple vessels

Cxt Desc: Master Cxt: STRUCTR 191 TPG: Treat Lvl:

Cons Flg: N Check Id: N TPG Base: N

Create Obj

Change By: BLY 10/08/2014 Location:

Add By: MERRY 08/13/2012

Image: Next Art # OK Cancel Save

The screenshot shows the 'Recovery Police' software interface. The 'Archives' section is active, displaying a list of records. The main window has a table with columns: Name, Material, Count, and Date. The 'Archives' section is active, showing a list of records with columns for Name, Material, Count, and Date. The 'Archives' section is active, showing a list of records with columns for Name, Material, Count, and Date.

Upgraded Proficio database



Lithic shed



Lithic shed interior

APPENDIX 4

Staff Participation on NEH SCHC

NEH SCHC Rehousing and Reorganization of the Jamestown Rediscovery Foundation Collection

Leah Stricker, Associate Curator

The National Endowment for the Humanities, Sustaining Cultural Heritage Collections grant was the impetus for a major organization effort by the Jamestown Rediscovery Staff. Artifacts were rehoused with 2 major goals in mind: appropriate environmental controls, and ease of artifact accessibility. After more than 20 years of excavation, conservation, and curation of a collection which contains well over 3 million artifacts, a new way to present and store the Jamestown Rediscovery Foundation's collection was developed. This project operated mostly in two spaces; the long-term storage archive, and the vault, which contains archival storage cabinets and multiple table top spaces used for presentation to the public and visiting researchers.

The curatorial team and conservation team worked together to complete this ambitious project. As the Associate Curator, 70% of my work time was spent managing the implementation of this grant. I became a part of this project in the second year of the grant, which required a lot of catch up for me personally. I was not yet familiar with the collection, and was required to quickly grasp every piece of the ongoing process in order to ensure that the project was accomplished on time, and met the highest standards of archaeological curation.

In the following summary, I will detail the steps, challenges and accomplishments of this 3 year process.

In the Long term storage archive:

The long term storage archive space was cleared of all materials not relevant to JR project excavation numbers, beginning with the 1994 excavation year. Any materials relevant to this collection which were not yet stored in the long term storage archive space were moved to this space and incorporated into the workflow with a few exceptions: Human remains, previously in this space were relocated to a new space within the vault, where all materials could be stored together with extra room for future projects. Unsorted lithics, which require sorting prior to cataloging and reincorporation into the collection were moved from the long term storage archive to a newly constructed shed. This will allow for these materials to be evaluated, and reincorporated into the collection in the future. This was a lot of physical box movement for our small staff, and required us to move and organize sets of boxes more than once throughout the implementation process.

Artifact bags were located sequentially using a variety of inventories. These inventories had been created by volunteers in years past and because we were required to incorporate multiple inventories into one, boxes of material were missed in the process and we had to backtrack to ensure all material was accounted for and organized sequentially.

Artifacts were evaluated during a 'triage' process primarily for 3 things:

- Conservation need – these artifacts were pulled to become part of the reference collection in order to be later conserved.
- Potential for storage in microclimates – these artifacts were also pulled to become part of the reference collection inventory before being rehoused in microclimates.

- Representation in reference collection – these artifacts were also pulled to be stored within the vault cabinets for long-term storage.
 - o This evaluation was done by both conservation and curatorial staff. Because of the size of our storage space, only 3 people could effectively do this process at a time. There was a change of staffing in the middle of this project, which required a new Associate Curator to quickly familiarize with the collection and this process in order to effectively participate, which slowed the process. These factors combined made the 'triage' process lengthy.

Non-acid free tags were tested and removed from bags. The acidic tags were then sorted in context order, scanned as a record and discarded. The old tags were used to write new acid-free tags, which were then replaced in the artifact bags from which the tags were originally pulled. This was accomplished with volunteer effort, managed by the Associate Curator.

Yellowing or otherwise degrading polyethylene bags were replaced with new ones, although this process will continue as polyethylene bags continue to age.

All artifacts pulled from the archive were tracked using an excel spreadsheet. If triaged artifacts had not yet been catalogued, they were catalogued. This gives each item a unique ID number. The associate curator was responsible for cataloging of all triaged artifacts. Artifacts which required conservation were digitally x-rayed before beginning to move through the rest of the conservation sequence. Only one staff member does these x-rays.

Artifact bags were then boxed in numerical sequence by JR context number, and placed on the shelves in order. Because of confusion with the inventories we used, boxes being missed in the process, and the continual movement of artifacts from the vault below to the long term storage space, some boxes were over filled and stacked too highly on the shelves. This meant that every single box needed to be moved back to make room for extra boxes towards the beginning of our sequential box layout to alleviate the overfilled boxes and overcrowded shelves. This was largely accomplished by the Associate Curator and one other staff member or intern.

Boxes were originally labeled with post-it notes and old labels were not removed. This was problematic as it was confusing and didn't include detailed descriptions of material housed within the box and its processing status. Old box labels and numbers were removed and discarded, and each box was then relabeled with handwritten, newly created labels, indicating the following information for EACH BAG within:

- o JR context number
- o Master Context
- o Description (what material type the artifacts are)
- o Labeling/numbering status of the artifacts
- o Cataloging status of the artifacts.

Boxes were made to be full, but not overpacked. Every single box was then moved for a third time, by the associate curator and an intern into its final housing space. We did not have time to package fragile or mended artifacts carefully with archival packing materials, but we will be returning to this material in the future.

It was noted during the second box-moving process that an evaluation of cataloging status of the collection needed to be compiled. As boxes were labeled with handwritten labels, bags which had written notation of their cataloged status were recorded on the label. Using a color-coded tagging system, volunteers under the supervision of the associate curator tagged boxes which contained material that has ALL been catalogued, boxes that contained material where it appears that NOTHING has been catalogued, and boxes which contain material that has ALL been catalogued EXCEPT for one bag. Verification of the cataloged status of the collection continues by checking the digital catalog itself, and updating the label on each bag. This work is being accomplished by an intern, under the management of the associate curator.

Finally, each rolling storage cabinet was labeled with the JR context number range that live on each shelf for ease of access.

In the Vault:

Vault cabinet contents were evaluated for inclusion in the Reference Collection. If deemed to be non-reference collection material, artifacts were moved to long term storage archive. Because this was occurring as the archive storage space was being organized, this led to overcrowding of boxes (addressed above). Unfortunately, unlabeled items were discovered during this process, which required the associate curator to search the catalog to determine that object's context. Occasionally this was impossible, and a small number of artifacts were sadly determined to be out of context. This movement of artifacts led curatorial staff to address a number of dormant issues within the collection, requiring time spent mending, labeling, cataloging for the first time, or researching specific artifacts.

Vault cabinets were then organized to contain Jamestown Rediscovery Foundation's reference collection. This is a lengthy process, requiring the associate curator and curator of collections to work together to identify material not yet represented, find specific items in the archive, verify that their identification is correct, and then decide what to include in the cabinets. A Reference Collection Tag was developed to identify specific objects as part of the reference collection. These handwritten tags are being incorporated slowly into the material.

The materials in these cabinets are being inventoried in a detailed manner, including their unique and object ID numbers assigned by our digital catalog. This inventory will then be used to update these artifacts location data in the digital catalog. It is hoped that these inventories can be imported into the database, updating a large number of artifact records at a time, rather than requiring the curators time to update individual records.

Artifacts within the reference collection cabinets will be placed in new archival boxes with clear lids to enable ease of visibility and containment of the artifact, although these boxes are expensive so we only purchase a few at a time. We would like to create new foam mounts for fragile items, and double check all materials in the vault to ensure they were catalogued appropriately and labeled with their JR context numbers, although this will be an ongoing project for our two curators.

Vault cabinets also contain what we are calling 'microstudies', or materials which have been selected as part of a unique study, or certain unique groups of artifacts deemed significant to our project's current and future research goals. Some cabinets contain microclimates, the development of which requires an

evaluation of every individual artifact by both the curatorial and conservation staff. We will be ensuring that these artifacts also are properly housed and labeled, similarly to the reference collection.

Each cabinet drawer will be relabeled with a new tag to indicate the type or year of materials on that drawer, and a label will be created for each cabinet door to indicate the materials housed within. This has not yet been accomplished.

It should be noted that the development of the reference collection begun during the implementation of the SCHC grant project is an incredibly ambitious amount of work for our small staff. At the conclusion of the grant funding, a new work plan was developed to accomplish the above-outlined goals, and work continues. Parts of this project were accomplished with the help and consultation of two research fellows; Madeline Bassett and Alexis Ohman, and two summer interns; Emily Anderson and Emma Derry.

Reference Collection Development and Digital Catalog Upgrades:

This physical rehousing is coupled with the development of our digital catalog. We have upgraded from an old and unstable digital catalog to Re:discovery's Proficio software. This comes with its own work plan for data clean up, to include updating and standardizing the nomenclature used, enhancing and developing attribute table linkages, and verifying identification of material in the collection.

The new catalog is helping us to confirm cataloged status of material in the long term storage archive, to continue to remove artifacts in long term storage which need to be represented in the reference collection, to ensure that artifacts are properly identified, and to develop new cataloging standards based on the material now housed in the reference collection. An example of the combination of the physical collection rehousing working with the digital is captured in the development of a cataloging manual. The manual will capture each material type and form represented in the reference collection, and serve as a guide for future catalogers, making the process available to an increased number of staff. This is the best way forward for capturing attributes specific to the incredible early seventeenth century material in the Jamestown Rediscovery Collection.

We would like to create not only artifact entries for each of our reference collection items, but also object entries. This extra level of cataloging will allow us to capture more information about each object in our collection, including in depth research and cross-mend data. Currently, the vast majority of reference collection items are not cataloged as objects. This will require a tremendous amount of cataloging for our two curators, while also maintaining the catalog for items being continually excavated.

Evaluation of Conservation Need

One of the major goals of the development of the reference collection and the rehousing of the long term storage archive was to assess conservation need. This was begun through the 'triage' process. As the reference collection was developed and the number of artifacts requiring conservation grew, the conservation and curatorial team developed a prioritization form to begin to address conservation needs. This will allow both curatorial and conservation staff to assess each artifact and create a

prioritization based on both conservation and curatorial value and need. As can be seen in the conservation metrics, there is an imminent need for conservation for this collection. The conservation assessment and prioritization is ongoing, and will continue to be so for a number of years as our conservation staff of two addresses this material. Based on preliminary assessments, it has become clear that the amount of conservation facing our small team is enormous.

Outcomes

We believe that this physical rehousing will have a multitude of positive outcomes. Jamestown Rediscovery's large collection is now more easily accessible for both researchers and colleagues and internal staff needs. This, we feel is a huge accomplishment. Because of this project, we have a better understanding of the needs of our ever-growing collection and we feel hopeful that we are better able to properly care for and study the materials we curate.

We also hope to pursue a similar digital upgrade to ensure that this collection is not only physically housed in the best way possible, but also is captured digitally. The same goals will apply; we hope that upgrading and evaluating the way in which the collection is catalogued will enable future research, and increase the visibility of our collection to the general public, and the academic community.

VAULT REFERENCE COLLECTION REPORT

Archaeological investigations since 1994 of James Fort by Jamestown Rediscovery on Jamestown Island have resulted in the recovery of approximately three-million artifacts from features such as dwellings, churches, workshops, pits, kitchens, wells, and blockhouses. Among the abundantly represented artifacts are: building tools and hardware; English arms and armor; small finds such as coins, buttons, and rings; crafts and industries like bead-making, pipe-making, glassblowing, and metallurgy evidence; foodways assemblages including domestic and wild faunal remains; Virginia Indian trade goods; and ceramic objects from the world over, including most of the European Continent, England, China, and Turkey. Because of its breadth and the tightly datable contexts from which they come, the assemblage is unparalleled in research potential. Access to the collections by qualified individuals conducting significant research is crucial.

Improving the storage of the artifacts within the comparative Study Collection storage area known as the Vault was essential to facilitate its use by staff and fellow researchers. Prior to the National Endowment for the Humanities collections rehousing project, representative artifacts of every material type, form, and decoration were selected from each Master Context excavated at Jamestown. These assemblages were placed by Master Context in metal geological collections cabinets. This housing method allowed for a quick visual assessment of artifact assemblages from Master Contexts, for quick temporal and spatial comparative analyses, and for quantitative analysis. However, this system appropriated considerable space because materials and forms were often duplicated in multiple cabinets, and fewer drawers were used within the cabinets because of oversized objects.

At the beginning of the project, the SCHC team decided that in addition to the Archives, the Study Collection should be reorganized as a Reference Collection. The reasons were twofold. One was to free up much needed space for incoming artifacts from our ongoing excavations. Furthermore, since most visiting material culture researchers prefer to study specific objects or materials, the collection was reorganized to represent every material type, object form, and decorative technique recovered during the Jamestown Rediscovery excavations.

Beginning with the NEH grant funding, as Curator of Collections, I reorganized the Study Collection as a Reference Collection, determined what artifacts should be returned to the Archive, and often decided what artifacts from Archive should be moved to the Reference Collection. With the exception of iron artifacts that are housed separately in the Dry Zone and maintained by conservators, the Reference Collection is presently contained within thirty metal geological cabinets in the Vault. Ceramics, glass, and bone objects are separated by historic periods: The Fort Period, 1607-1624; the second through fourth quarters of the seventeenth century; the eighteenth century; and the Civil War and later.

As part of the reorganization, I created Micro-Studies of some objects or material types because of their rarity in the material record, because they've been analyzed, or because of their research potential. For example, in the first quarter of the 17th century, Chinese porcelain was rare and expensive in England, and even rarer at Jamestown. Thus, most first quarter of the 17th century Chinese porcelain sherds are retained in the Reference Collection as a Micro-Study for detailed analysis and cross-mending. Likewise, analyzed artifacts such as scrap copper and shell beads are maintained as Micro-Studies within their material types. Finally, artifacts types for future research, such as glass beads and buttons, are also maintained as Micro-Studies within their material types.

During the project, I began assigning unique object numbers to Reference Objects within our digital cataloging program. These digital object records include a detailed description of the objects, which will serve as useful tools for analysis, will facilitate future research and cataloging, and will assist in the creation of a digital online archive. All bone artifacts and most representative ceramic types were assigned object numbers during the project; all Fort Period ceramic sherds and all bone artifacts were inventoried into an Excel spread sheet. I updated the policy guidelines to reflect the new organizational approach. During the two-years of

VAULT REFERENCE COLLECTION REPORT

SCHC, I devoted at least 40% of my time, and usually 80%, each week reorganizing the Study Collection and inventorying the Reference Collection, and also advising on what should and should not be housed in the Archive. As an addendum to the project, numerous problems with our digital database were identified. I currently devote approximately 10% of my time each week on database redesign.

The reorganization of the entire archaeological collection has proven to be successful. It is easier to locate and retrieve artifacts from both the Archive and the Reference Collection. Rediscovery staff members use the Reference Collection often for teaching and comparative purposes. Visiting scholars from Harvard and Washington and Lee University recently used the Chinese porcelain assemblage for research. A professor from James Madison used the glass bead assemblage for comparative purposes. As well, three area craftsmen have used the Reference Collections recently, which has helped them manufacture exact reproductions.

Merry A. Outlaw
Curator of Collections

SCHC KELSO REPORT

Collections Reorganization

The Jamestown Rediscovery Archaeological Project began in 1994 and has run continually for the past 25 years. The work has been an implementation of the process of **historical archaeology**; a melding of defined archaeological contexts, primary historical documents, scientific analysis and art/architectural history. During that time over 3 million artifacts have been recovered from over 5000 individual 17th century archaeological deposits primarily found on the site of the 1607-1625 James Fort. Untold hours have been spent during that quarter century, conserving, cataloguing, organizing and storing this enormous artifact collection in state-of-the-art facilities. Technical reports, articles and books were written drawing necessarily on the interpretation of the archaeological contexts. The overall collection was physically curated in bulk storage arranged in major context groups, in a massive metals conservation queue, in assemblages of the most dynastic artifacts from each individual archaeological context, in a numerical objects collection, in some artifact type groups, and by individual assemblages for focused research studies by staff or outside scholars. With so many sub-collections it became difficult to find individual objects for study spread among those many sub-assemblages. Making the location even more difficult, the original catalogue system in some cases over the years, had become inconsistent or erroneous making it often impossible to digitally and physically identify and locate some individual objects for report writing and exhibitions. Clearly a re-organization of the physical collection and the catalogue process was needed for future access and interpretation. Hence the need for the SCHC NEH grant to support a collection re-organization.

Overall there are basically two ways to organize a collection physically, keeping all the artifacts from individual contexts together or to physically create a type collection regardless of context. In my experience with directing long-running archaeological projects over the past 50 years, I know it is physically impossible to do both at the same time. But one can come close. To do that, our team made the decision to create a type collection to replace the contextually arranged collection but still maintaining contextual provenance by digital or physical labels with each piece and to organize the bulk storage numerically 1-****. This entailed inspecting and compactly repackaging all the original box storage, retrieving overlooked metals that needed conservation, and collecting together major diagnostic objects for a research type collection. Context was still maintained by up-grading the catalogue system with corrections where necessary, and to include object location information for the type collection and bulk storage. In my view, this effort comes as close as it can to having the best of both curation worlds: creating a type-based collection but at the same time maintaining the ability to have textual context-based accessibility.

WMK

Don Warmke Staff Archaeologist

Assigned to conservation team assessing metals and placing them in the most appropriate environment, including creating microclimates. Effort at forty percent for years one and two.

The implementation of the plan for the HCSC Grant went generally according to plan. Removing artifacts from their original storage location was optimized by utilizing two staff to remove and stage the artifacts for triage. Triage was generally conducted by three staff-removing the artifacts from their bags, inspecting the iron and copper artifacts and removing acidic bag tags. The process was slow initially due to the lack of familiarity of some of the staff with conditions and uniqueness of the metal artifacts but this was gradually overcome. Initial screening of artifacts for conservation was done by the curator of the collection and she was weighing the backlog for conservation with the uniqueness of each object. Hence, many artifacts screened during triage were pulled for conservation since many were in good material condition or they were one-of-a-kind objects.

After triage was completed, the bags containing the artifacts were consolidated and rehoused in boxes for storage and located in context sequential order within the collection. This makes locating and accessing these artifacts so much easier and quicker when conducting research or inventory. Many of the iron objects returned to storage were duplicates of artifacts already conserved or in a condition beyond conservation. A note regarding pulling artifacts for triage: those staff pulling the bags were utilizing a database created by volunteers who had reboxed the collection. During triage, it was observed that approximately thirty five of these boxes were overlooked by the volunteers when collating the database, resulting in backfilling many boxes already stored with additional bags of artifacts. This resulted in a reshuffle of all storage boxes at the end of the triage process, utilizing additional staff time.

Triage also resulted in finding artifacts that were misidentified when first catalogued or not having been catalogued at all.

Concurrently, while triage was being conducted, storage for the iron objects or dry zone was being reorganized. Space within the zone had to be optimized to accommodate additional iron artifacts pulled during triage and to facilitate inventory of the iron artifacts in the collection. Artifacts were collated according to form vice master context. This ultimately facilitates management of the collection since our previous management software was not capable of creating inventory lists in an accurate or timely way. New management software has been incorporated but has to be debugged since it utilizes data from the previous database. At present, we have over fifty one hundred artifacts in storage in the dry zone, including both conserved and unconserved artifacts.

Microclimates have also been created for artifacts from the dry zone that have been deemed excess in relation to the conserved collection or has been conserved and cannot be identified. Over one hundred and twenty five artifacts have been put in microclimates with more to be installed dependent upon duplication and condition of the artifact. A schedule will have to be

established to monitor these artifacts for material condition which will create additional workload on staff.

During the course of the HCSC Grant Project, time normally allocated for associated conservation responsibilities were delayed, resulting in additional material degradation to unconserved iron artifacts. This was unfortunate but necessary since we recovered over one thousand iron artifacts from the storage collection that will be prioritized for conservation. Numerous lessons learned were identified during the Project, among which the following are offered.

1. Database management. Without an accurate and manageable database, the collection becomes unresearchable. This is a full time job, but at present is a staff member collateral duty.
2. Staffing. At present, the organization has one full time and one part time conservator to handle a collection involving multiple material types and numbers of artifacts that would challenge a much larger staff. Conservation efforts will continue to be insufficient to deal with this workload.
3. Research. So many of the iron artifacts conserved need to be researched for report writing and conference presenting purposes but again, due to staffing constraints, this research is not possible.

Summary of Senior Conservator, Dan Gambles Involvement in the NEH SCHC Project

As Senior Conservator, forty percent of my work was devoted to this project. This role within the NEH SCHC Project consisted of overseeing the correction of the metals study collection to a more organized and accessible reference collection this will improve access by both the staff and visiting researchers. This goal was accomplished by removing metal artifacts from the archived collection, including them in the study collection, then inventorying the collection and reorganizing the same by form.

The initial phase of the project consisted of going through every bag of artifacts in the archive, triage, and removing unique metal artifacts and placing each bag in sequential order. This process was completed twice weekly initially but it was discovered that in order to complete this process, more time was required and toward the end, the curatorial and conservation staff was performing triage on a daily basis. The artifacts removed include sword hilts, tools, or any artifact that is unique, not available within the reference collection and or shows extreme signs of decomposition. These artifacts were deemed irrelevant at the time of cataloguing. Once removed, the artifact would then be placed in a bag to be readied for x-ray or inclusion within the reference collection. All iron artifacts removed from the archive collection were x-rayed to assist the conservator in identification and also determine the best way to conserve the artifact. After x-ray, the iron artifacts were passed on to Don Warmke who inventoried, and placed the same within the dry-room according to form. Over one hundred x-rays were produced and it was determined that it would be best to inventory all the iron artifacts on the x-rays so that this information could be reproduced within our cataloguing program Proficio.

Other metal artifacts which were removed from the archive collection during triage included copper, lead, pewter and silver. Like the iron, these artifacts were unique in nature and in some cases were not part of the reference collection. These other metals did not require x-raying but were treated much like the iron pieces. They were included within the study collection by form, again, making the collection more organized and accessible. And, were inventoried to verify that the artifact was included in our digital catalogue.

At the beginning of the project, the team had a clear objective, to organize the collection. During the process much more information was learned. Numbering was an issue that needed to be corrected and doing this project allowed this to take place as every metal artifact in the collection was examined. Nomenclature, or what the artifact was identified as, was also an issue concerning the collection and is in the process of being corrected. This project, again, allowed the staff to standardize the identification of the same. Lastly, it was discovered that many of the artifacts were misidentified, examining the collection allowed us to correct these unknown issues.

As a result of this project, many procedures were put into place to assist the conservator in making better decisions as they pertain to the conservation process. Conservation assessment forms were developed to prioritize metal artifacts according to uniqueness and deterioration. These Conservation forms will also assist in the identification of the artifact. And, lastly, images of the artifacts could be produced which can be used as identification and or put in a catalogue for research purposes.

The goal of the NEH SCHC Project was to organize the collection for reference and research purposes and is being accomplished although there is still much work to be done. This is an ongoing process as excavations continue at Jamestown. But this process allowed the conservation and curatorial staff to gain a better understanding of the collection, organize it and in the future be a better steward of a collection that is of vast importance.